Read November 21, 1771.

XLIV *Variation of the Compass, as observed on board the* Endeavour *Bark, in a Voyage round the World. Communicated by Lieut.* James Cook, *Commander of the said Bark.*

N. B. THE day of the month is noted according to the nautical account, which therefore in all the obfervations noted P. M. is one day forwarder than the civil account. The latitude *in* is deduced from the laft preceding meridian altitude of the fun ; and the longitude *in* is corrected by the laft obfervations of the diftances of the moon from the fun and ftars.

Time		Lat. in	Long. in	Variation		Remarks
		North	Weft	How found	Means	
			Weft from Greenwich		° ′	
1768						
Auguft	8	Englifh Channel			23 0 W.	
September	5	C. Fineftre S. by ½ W. 6 leagues		pr. Azimuths	18 42	
	6	42 1	9 50 W.	pr. Azimuths	21 40	
	7	40 29	10 11	pr. Azimuths	21 4	
	9	37 4	11 34	pr. Azimuths	19 50	From the Downs to Madeira
P. M. } A. M. }	10	36 46	11 58	pr. Azimuths	21 19	
		35 40	13 4	pr. Amplitudes	20 39	
P. M. } A. M. }	11	34 58	13 50	pr. Azimuths & Amplitudes }	18 32	
		34 20	14 20	pr. Azim. & pr. Amplitudes }	17 27	
		Funchal ifland of Madeira				Thefe are taken from Dr. Heberden, F. R. S. who refided upon the ifland.
		32 33 33	16 49		15 30	
	20	Funchal ifland of Madeira N. 76 E. dift. 19 leag.		pr. Azimuths	16 30	
	22	Salvages S. dift. 9 or 10 leag.		pr. Azimuths	17 50	

Time

Time	Lat. in	Lon. in	Variation		Remarks
			How found	Means	
1768 September	North ° ′	West		° ′	
23	29 40	15 30	{	17 30 W. 17 00 17 15	} Found by taking the ⊙'s Azim. at equal Altitudes, before and after-noon.
P. M. Do.			pr. Amplitudes	18 30	
A. M.	29 7	15 50	pr. Azimuths	16 30	Paſſage to Rio de Janeiro.
24 P. M. {	Pico Teneriff N. 18 E. Diſtance 140 miles	}	pr. Azimuths pr. Amplitudes	16 43 15 46	
24 A. M.	26 50	17 12	Ditto	14 58	
25 P. M.	25 20	18 50	pr. Amplitudes	15 1	
28 { A.M. { P.M	20 56 19 33	20 40 20 50	pr. Sev. Azim. Ditto	12 46 12 43	
29 P. M.	18 38	21 0	pr. Azimuths	12 33	
October					
1 { P.M. { A.M.	15 40 14 35	22 0 22 8	Ditto Ditto Ditto	10 37 10 0 11 40	
3	by another Compaſs 12 24	22 22	Amplitudes	8 49	
5 P. M.	11 53	22 0	pr. Azimuths ⎫ pr. Amp. 5 59 ⎬	6 10	
6 A. M.	9 45	22 20	pr. S. Az. 6 21	8 52	Towards Rio Janeiro.
8 { P. M. { A.M.	9 42 8 46	22 19 22 4	Ditto Ditto 8 12 ⎫ 7 47 ⎬	9 0 8 0	
9 { P.M. { A.M.	8 12 8 6	22 4 22 13	Ditto 8 23 ⎫ 8 20 ⎬ pr. Amplitudes 7 48—	8 21½ 7 48	
10 P. M.	7 48	22 13	pr. Sev. Azim.	8 39	
13 P. M.	7 13	22 33	Ditto	8 54	
16 P. M.	6 50	23 46	Ditto	8 40	
21	3 4	26 30	Ditto	4 2	
22 A. M.	2 0	27 55	Amplitudes ⎫ 3 13 ⎬ pr. Azimuths 3 21 ⎭	3 17	
25 P. M.	0 55	28 55	pr. Am. 2 16 ⎫ pr. Azimuhs ⎬ Ditto 2 33 ⎭	2 24½	

Time	Lat. in	Lon. in	Variation		Remarks
			How found	Means	
1768 October	° ′	° ′		° ′	
	South	Weſt			
27 A. M.	2 3	31 0	Ditto	2 48 W.	
29 P. M.	3 59	32 30	Ditto	2 25	
30 P. M.	5 46	32 48	pr. Sev. Azim.	1 31	
31 P. M.	7 30	33 4	Ditto	0 15	
November					
1 { P. M. / A.M.	9 22	33 16	Ditto / Ditto	0 58 / 0 18	
2 P. M.	10 3	33 0	Ditto	0 34 E.	
3 P. M.	12 27	33 0	Ditto	0 47	
4 P. M.	15 25	33 40	Ditto	1 23	
7 P. M.	18 30	36 10	Ditto	4 41	
8 { P. M. / A. M.	20 4 / 21 16	37 18 / 37 50	Ditto / Ditto	5 26 / 7 52	} In foundings off the coaſt of Brazil.
12 P. M.	Cape Forio W.N.W. diſt. 12 leagues			6 40	
13 P. M.	{ Entrance Rio de Janeiro / W. N. W. diſt. 5 leagues }			7 34	
December					
12 { P. M. / A. M.	25 44 / 26 0	41 4 / 41 20	pr. Amplitudes / pr. Sev. Azim.	8 40 / 8 23	Paſſage to Terra dell Fuego.
13 P. M.	26 34	41 33	Ditto	8 23	
16 P. M.	30 20	41 49	Ditto	9 36	
18 P. M.	32 30	42 48	Ditto	11 3	
19 P. M.	32 54	43 38	Amplitudes	11 3	
20 P. M.	34 34	45 38	pr. Sev. Azim.	13 44	
22 { P. M. / A. M.	36 50 / 37 8	48 32 / 49 1	{ Azim. 15 1 / Amp. 15 1 } / pr. Amplitude	15 1 / 16 1	
23 { P. M. / A. M.	37 8 / 36 46	49 0 / 49 2	{ pr.Az.15 24 / Amp. 16 5 } / pr. Amplitude	15 45 / 15 30	
29 P. M.	41 40	56 25	pr. Dº. 16 12 / pr. Azimuth 16 32 }	16 22	In foundings off the coaſt of South America.
31 P. M.	42 40	60 25	pr. Dº. 18 44 / pr. Amplitude 18 22 }	18 36	

Time

Time	Lat. in	Lon. in	Variation		Remarks
			How found	Mean	
1769 **January**	° ′ South	° ′ Weſt		° ′	
5 P. M.	48 42	60 51	pr. Am. 20 0 } Amp. 20 9	20 4½ E.	
9 P. M.	51 30	63 30	pr. Several Az.	22 24	
10 P. M.	52 40	65 20	Ditto	21 57	
11 A. M.	54 0	67 30	Ditto } 10 leag. from Terra del Feugo	23 30	
21 A. M.	Strait le Mare		Ditto	24 9	
22 A. M.	56 7	65 45	per Several Az.	25 4	{ Here the variation ſeems to be affected by the land, as theſe obſervations were well made.
24	55 40	{ Near ſome iſle on the coaſt of Terra del Feugo E. of C. Horne. }	ditto	21 0	
25 A. M.	55 40	{ C. Horne S.W. 3 W. 8 leag. }	pr. Amp.	21 16	Paſſage from Cape Horne to Ota-hitee.
28 P. M.	57 0	69 0	pr. ſeveral Az.	22 0	{ Mean reſult of many azim. the ſea calm and ſmooth.
30 P. M.	60 10	74 26	Ditto	27 9	
February					
1 P. M.	59 23	76 45	Ditto	24 53	
3 P. M.	58 30	80 58	Ditto	24 4	
13 P. M.	49 13	89 36	Ditto	17 0	
15 { P. M.	48 56	91 27	Ditto	12 0	
15 { A M.	48 10	92 0	Ditto	11 0	
21 A. M.	44 39	103 0	Ditto	6 30	
23 P. M.	39 43	105 52	Ditto	5 34	
27 A. M.	39 43	110 26	pr.Amp. 2 17 } pr.Azim.2 24	2 20½	
March					
4 P. M.	36 49	111 54	Ditto 2 6 } Amp. 2 46	2 26	
8 P. M.	37 8	116 8	pr. Several Az.	3 13	{ Paſſage from Cape Horne to Ota-hitee
9 P. M.	37 24	117 41	Ditto	4 41	
10 P. M.	35 30	119 30	Ditto	1 42	
11 Ditto	34 0	121 0	Ditto	4 12	
12 Ditto	32 40	123 0	Ditto	4 23	
13 { P. M.	31 20	124 40	Amplitudes	3 20	
13 { A. M.	30 56	125 20	pr. Azimuths	3 0	

Time	Lat. in	Lon. in	Variation		Remarks
			How found	Means	
1769 **March**	° ′ South	° ′		° ′	
15 { P. M. A. M.	30 30 29 36	126 0 126 50	pr. Azimuths Ditto	3 45 E. 3 22	
16 { P. M. A. M.	29 32 29 28	126 48 127 4	pr. 21 Azimuths Ditto	1 30 2 18	
17 P. M.	29 10	127 16	Ditto	3 27	
19 A. M.	27 40	129 20	Ditto	3 14	
21 A. M.	25 21	129 28	Amplit. 3 0} pr. Azim. 3 43}	3 21½	
22 Ditto	25 21	129 32	Azimuth	3 10	
28 P. M.	21 14	127 38	Amplitudes	3 56	
29 P. M.	20 29	127 44	pr. Several Az.	2 27	
31 P. M.	19 30	129 10	Ditto	2 25	
April 1 P. M.	19 7	131 40	Ditto	2 32	
4 { P. M. A. M.	18 46 18 36	138 0 139 10	Ditto Ditto	2 54 2 54	
5 P. M.	18 36	139 40	Amplitude	3 30	
8 P. M.	17 48	143 50	Several Azim.	6 32	
9 P. M.	17 36	145 30	Ditto	4 54	
10 P. M.	17 42	146 16	Ditto	5 41	
11 P. M.	18 0	147 59	Ditto	6 30	On shore at Fort Venus by four of Dr. Knight's compasses, which appeared to be all good.
August 10 A. M.	17 29 17 15	149 30 151 41	Meridian line pr. Several Az.	4 45½ 5 50	
13 Ditto	21 20	151 15	Ditto	5 40	From the Society Isles to New Zeland.
15 P. M.	22 8	150 55	Amplitude	5 37	
A. M.	23 37	150 37	Ditto	6 7	
18 { P. M. A. M.	26 10 26 30	149 46 Ditto	Ditto Ditto	8 8 7 58	
23 P. M.	30 43	148 0	Azimuths	7 30	
24 A. M.	32 40	147 14	Ditto	7 18	
27 Ditto	33 8	147 25	Ditto	6 40	
30 Ditto	38 3	147 6	Ditto	7 9	
September 5 P. M.	38 29	145 32	Ditto	7 0	
13 Ditto	33 0	153 0	Ditto	8 8	

Time	Lat. in	Lon. in	Variation		Remarks
			How found	Means	
	° ′	° ′		° ′	
1769 September	South				
19 {P. M.	29 0	159 42	pr. Amplitudes	8 36 E.	
{A. M.	29 0	159 25	pr. Sev. Azim.	8 29	
25 P. M.	33 30	163 40	Ditto	10 48	
October					
3 P. M.	36 50	173 46	Ditto	13 22	
4 P. M.	37 6	174 46	Ditto	12 48	
6 {P. M.	38 33	179 0	Ditto 12 50 } Amplit. 12 48 }	12 59	
{A. M.	39 0	180 0	1 Ditto	14 2	
7 P. M.	39 11	180 30	Azim. 15 4 } Ampl. 15 5 }	15 4½	In sight of the East coast of New Zeland.
15 P. M.	39 37	182 30	Azimuths	14 10	East coast of New Zeland.
17 A. M.	40 0	182 0	Ditto	10 22	
November					
9	36 48	184 12	Several Azim.	11 9	} On shore in Mercury Bay, N. W. coast.
25	35 50	185 15	Ditto	12 40	
26	35 15	Ditto	Amplitudes	13 10	
28	35 0	185 30	pr. Azimuths	11 45	
December					
8	34 42	185 30	pr. Amplitude	12 51	
10 P. M.	34 40	186 15	Azim. 12 40 } Ampl. 12 40 }	12 40	Off the Northern parts of New Zeland.
11 P. M.	34 40	186 45	Amplitude	12 20	
25 A. M.	34 0	188 0	Several Azim.	11 25	
1770 January					
6 A. M.	35 8	188 0	Ditto	12 26	
12 {P. M.	38 12	185 3	Ditto	15 0	
{A. M.	39 0	Ditto	Ditto	14 15	West coast.
14 P. M.	39 40	Ditto	pr. Amplitudes	13 0	
15 A. M.	40 30	186 0	Azimuths	13 5	
February					
11 A. M.	41 0	183 0	pr. Amplitudes	14 0	
12 P. M.	41 26	184 0	Ditto	14 0	
14 Ditto	42 8	184 15	Azim. 15 8 } Amp. 15 0 }	15 4	

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Time	Lat. in	Lon. in	Variation		Remarks
			How found	Means	
1770 February	° ' South	° '		° '	
17 A.M.	44 0	186 30	Ditto 14 32 / Ditto 14 16 }	14 24 E.	
18 Ditto	45 0	186 15	pr. Amplitudes	15 36	
March					
1 P.M.	47 34	187 30	pr. Azimuths	16 34	East coast.
4 A.M.	46 30	189 0	Ditto	16 16	
7 { P.M.	46 54	191 0	Amplitude	15 10	
7 { A.M.	47 0	Ditto	pr. Azimuths	15 56	
9 P.M.	47 12	191 30	pr. Amplitudes	16 29	
15 P.M.	45 0	192 30	Ditto	15 2	
16 Ditto	44 27	191 15	pr. Azimuths	13 48	West coast.
25 A.M.	40 30	186 0	pr. Amplitudes	12 20	
April					
7 P.M.	37 15	196 40	Several Azim.	13 50	
8 P.M.	37 40	197 40	Ditto	13 56	
10 A.M.	38 45	202 23	Ampl. 11 25 / Azim. 11 20 }	11 22½	Between New Zeland and New Holland.
13 { P.M.	39 15	203 40	Amplitude / Azimuth }	12 25	
13 { A.M.	39 23	204 0	Ditto	12 29	
14 P.M.	39 24	204 4	Amplitude	11 28	
14 A.M.	39 23	204 15	Azimuth	11 30	
20 A.M.	37 0	210 0	Ditto	10 40	Coast of New South Wales on the East coast of New Holland.
21 P.M.	36 35	210 0	Ditto	10 42	
22 A.M.	35 35	209 23	Ditto	9 50	
24 Ditto	35 35	209 0	Ditto	7 41	
25 { P.M.	35 18	209 11	Ditto	9 15	
25 { A.M.	34 0	208 50	Ampl. 9 36 / Azim. 9 7 }	9 21½	
26 P.M.	34 18	208 49	Several Azim.	8 48	
May					
7 { P.M.	33 50	208 37	Ditto	8 0	Mean of all the Compasses.
7 { A.M.	33 22	208 20	D°. with needles	7 56	
8 P.M.	Ditto	Ditto	Azimuths	8 25	
10	33 13	207 20	Ditto	8 0	
11 A.M.	32 40	206 36	pr. d°. and Amp.	9 10	
18	26 20	206 46	pr. Azimuths	8 40	
19 { P.M.	25 34	206 45	Ditto	8 36	
19 { A.M.	25 24	206 38	pr. Amplitudes / pr. Azimuths }	8 21½	

Time	Lat. in	Lon. in	Variation		Remarks
			How found	Means	
1770 May	° ′ South	° ′		° ′	
20 P. M.	25 12		pr. Azimuth	8 45 E.	
22 { P. M.	24 34	307 40	pr. Amplitude	8 3	
{ A. M.	24 25	208 0	Azimuths	7 50	
26 P. M.	23 24	209 10	Ditto	7 28	
June					
3 A. M.	20 20	211 20	Ditto	6 57	
5 A. M.	19 18	212 30	Amplitude	5 35	
6 A. M.	19 4	212 50	Ditto	5 31	
7 { P. M.	19 0	213 15	Amplitude	5 25	
{ A. M.	18 52	213 35	Ditto	5 0	
9 A. M.	16 59	213 55	Ditto	4 53	
August					
23 P. M.	10 36	219 8	Amplitude	2 54	Strait between New Holland and New Guinea.
27 A. M.	10 3	220 45	Ditto	2 30	
28 P. M.	9 51	221 5	Ditto	2 51	
September					
2 P. M.	7 39	222 40	Ditto	2 34	Coast of N. Guinea.
3 Ditto	7 2	222 30	Ditto	2 4	
4 P. M.	6 18	222 10	Ditto	2 30	Between N. Guinea and Timor.
9 P. M.	9 36	232 13	Azim. 0 12 } Amp. 0 5 }	0 8¾ W.	
10 A. M.	9 50	232 57	Ditto	0 2	Eaſt coaſt of Timor.
13 Ditto	9 40	235 45	Amp. 1 10 } Azim. 1 27 }	1 18½	
14 Ditto	9 50	235 45	Amp. and Azim.	2 4	
17 P. M.	10 8	236 0	Amplitude	1 49	Iſland of Savre.
24 Ditto	11 10	241 30	pr. Several Azim.	2 44	South coaſt of Java.
27 Ditto	11 10	246 50	Ditto	3 10	
1771 January					
27 P. M.	10	256 32	Ditto	2 51	
February					
3 P. M.	15 52	264 36	Ditto	2 56	
7 P. M.	18 34	274 50	Ditto	3 24	
14 P. M.	21 56	287 10	Ditto	4 10	

Time	Lat. in	Lon. in	Variation		Remarks
			How found	Means	
1771	° ′	• ′		° ′	
February	South	West			
17 P. M.	23 20	297 18	pr.Several Azim.	0 20 W	
20 P. M.	24 57	304 31	Ditto	12 15	
23 P. M.	26 59	311 28	pr. Amplitude	17 30	} Java head to the Cape of Good Hope.
25 { P. M.	27 55	314 0	pr. Azimuth	24 20	
25 { A. M.	28 40	316 0	pr. Amplitude	24 0	
26 P. M.	28 54	316 30	Azimuths	26 10	
March					
4 P. M.	31 8	326 30	Ditto	25 35	
8 A. M.	34 20	333 0	Amp. 28 30 } Azim. 28 8	28 19	
10 P. M.	35 40	337 10	pr. Amplitude	24 0	
12 P. M.	34 54	339 0	Ditto	22 30	
	Table Bay, Cape of Good Hope.			20 30	By several observations.
April					From the Cape of Good Hope to England.
23 { P. M.	27 12	349 30	Amplitude	17 40	
23 { A. M.	26 34	250 32	Azimuth	18 37	
24 { P. M.	26 12	350 46	Amplitude	17 —	
24 { A. M.	25 26	351 16	Amp. and Azim.	17 30	
28 P. M.	19 50	357 0	Azimuth	14 0	
29 Ditto	18 30	359 6	Ditto	13 53	
May					
5 A. M.	15 25	7 0	Ditto	13 10	
7 Ditto	12 30	9 45	Ditto	12 50	
9 P. M.	10 24	12 0	Ditto and Amp.	11 00	
13 A. M.	3 18	17 46	Azimuth	10 00	
	North				
19 Ditto	4 20	21 51	Amplitude	7 40	
23 Ditto	7 40	26 0	Azimuth	9 40	
26 Ditto	10 38	29 22	Ditto	6 30	
31 Ditto	18 25	35 30	Ditto	5 9	
June					
1 A. M.	20 0	36 30		6 40	
2 Ditto	21 4	38 0	Ditto	5 4	
4 Ditto	23 30	40 0	Ditto	4 30	
6 Ditto	25 40	43 18	Ampl. 5 5 } Azim. 6 4	5 34½	

Time

Time	Lat. in	Lon. in	Variation		Remarks
			How found	Means	
1771 June	° ′ North	° ′ Weſt		°	
7 A. M.	27 22	43 43	20 Azimuths	5 20 W.	
8 Ditto	28 30	43 42	Ditto	5 24	
9 Ditto	29 51	44 9	Amp. 7 3 } Azim. 7 30 }	7 17	
10 P. M.	30 26	44 15	Ampl. 9 18 } Azim. 9 — }	9 9	
12 P. M.	32 16	45 14	Amplitude	7 0	
A. M.	32 40	45 0	Azimuths	6 55	
13 { P. M.	33 16	44 53	Azim. and Amp.	8 23	
{ A. M.	33 53	44 25	Ampl. 8 15 } Azim. 8 14 }	8 14½	
14 P. M.	34 36	Ditto	Amplitude	8 14	
17 Ditto	38 26	40 20	Azimuth	9 1	
18 { P. M.	39 12	39 0	Azim. 14 13 } Ampl. 14 18 }	14 15½	
{ A. M.	39 22	38 0	Amplitude	14 24	
30 { P. M.	43 55	17 16	Azimuth	18 30	
{ A. M.	44 30	16 18	Ditto	19 30	
July					
1 { P. M.	44 40	15 44	Azimuths	23 0	
{ A. M.	44 50	16 10	Ditto	22 50	
3 P. M.	45 —	13 0	Ditto	20 36	
4 { P. M.	45 30	10 45	15 Azimuths } 2 Amplitudes }	21 25½	
{ A. M.	45 20	9 37	20 Amplitudes } 12 Azimuths }	21 10	
7 P. M.	45 45	8 38	Amplitude	22 30	

Extract from Capt. Cook's Journal.

Nov. 9   At 8 A. M. Mr. Green and I went on fhore, to obferve the
1771   Tranfit of Mercury, which came on at 7ʰ 20′ 58″ apparent
time, and was obferved by Mr. Green alone; I at this time
was taking the Sun's altitude in order to afcertain the
time.

		h	′	″	
Mr. Green	Internal contact	12	8	58	P. M.
	External contact	—	9	55	
C. Cook	Internal contact	—	8	45	
	External contact	—	9	48	

Lat. obferved at noon 36° 48′ 28″, the mean of this and yefterday
obfervations gives 36° 48′ 5½″ South, the latitude of the place of
obfervation. The variation of the compafs was found to be 11° 9′
Eaft.

⁎ Thefe obfervations were made by the help of a Graham's watch
with a fecond hand; corrected by obferved altitudes of the Sun.